



ISTITUTO ITALIANO  
DI TECNOLOGIA

## TITLE

Water-resistant paper

## INVENTORS

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## DESCRIPTION

The smart Materials workgroup has developed a simple and cost effective waterproofing method, impregnating bionanocomposites into nonwovens such as paper. The proposed technology uses a simple method to create polymer nanoparticle/cyanoacrylate monomer dispersions in solution. Prepared dispersions can be impregnated into wide variety nonwovens using a number of different techniques such as roll, dip or spray coating. The impregnated composites can be left in an ambient environment to allow the cyanoacrylate monomers to cross link in situ within the fibrillar matrix. It is also possible to use wax and/or cyclic olefin copolymer nanoparticles to render the nanocomposites completely biodegradable.

The paper obtained with this process is of superior quality and, for example, can be fed into laser jet printers as ordinary paper with no difference whatsoever, in fact the bionanocomposite which is impregnated into the paper matrix is unnoticeable. However, the treated paper immersed in water, remains intact preserving the printed information.

The picture underlines the borderline between treated and untreated paper, when immersed in water.



## APPLICATIONS

Countless applications can be imagined for this technology, in particular we have addressed the following industrial fields

- Packaging Industry
- Textile Industry
- Paper Industry
- Composite Industry

## KEYWORDS

water-resistant paper, waterproof paper

## BIBLIOGRAPHIC DATA TO2011A000411

Procedimento di trattamento di materiali fibrosi per ottenere proprietà idrorepellenti, materiali fibrosi idrofobici ed articoli che li comprendono così ottenuti

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